

PATENT ABSTRACTS OF JAPAN

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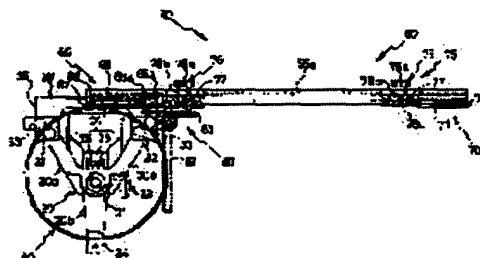
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(54) HAT FRAME DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a hat frame device capable of enlarging the maximum turning angle of a turning frame.

SOLUTION: In this hat frame device, wires extending from the side of a turning frame 40 are respectively laid along the under side of a connecting plate 66 to outside ends 67 and 72 of the left side, both ends of the wires are respectively fixed to a fixing spot on the upper surface of a connecting piece 68 and a connecting spot on the upper surface of a connecting plate 70 by bending toward the upper surface side in a U shape at the outer ends 67 and 72. The maximum turning angle of a turning frame 40 is enlarged as a cloth- carrying frame can be moved to left or right until the outer ends 67 and 72 of the connecting plate 66 locate around the upper end of the turning frame 67.



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CLAIMS

[Claim(s)]

[Claim 1] The base frame attached near the cylinder bed of embroidery sewing equipment free [movement in the length direction of a cylinder bed]. The rotation frame with which it is supported by the base frame free [rotation] and it is equipped with a hat frame removable. The wire twisted around the rotation frame. the connection which has one pair of wire connection sections which are fixed to a cloth conveyance frame removable and connect a part for the both ends of a wire, respectively to both ends -- a member It is hat frame equipment equipped with the above, and is characterized by ****(ing) the wire prolonged from the aforementioned rotation frame side to a rotation frame and the outside edge of an opposite side along with each wire connection section bottom.

[Claim 2] The wire ****(ed) to the outside edge of the aforementioned wire connection section is hat frame equipment according to claim 1 characterized by having been crooked to the upper surface side in the shape of U-turn at the outside edge, and fixing the edge of the aforementioned wire to the wire fixed part by the side of the upper surface of the wire connection section.

[Claim 3] One wire fixed part of the one aforementioned pair of wire connection sections is hat frame equipment according to claim 2 characterized by being constituted by the wire possible [grant of tension].

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to what was constituted so that the embroidery field which can carry out embroidery sewing to a hat especially could be expanded about the hat frame equipment which equips embroidery sewing equipment and can embroider.

[0002]

[Description of the Prior Art] The cloth conveyance frame by which a move drive is carried out independently of the direction of X (longitudinal direction) and the direction (cross direction) of Y in which two or more embroidery sewing machines, the cylinder bed of these embroidery sewing machine, and multi-head type embroidery sewing equipment cross at right angles, While it has the embroidery frame which is attached in this cloth conveyance frame free [attachment and detachment], and can set embroidered cloth possible [embroidery sewing], each of two or more embroidery sewing machines of multi-head type embroidery sewing equipment is equipped removable, and practical use is variously presented with the hat frame equipment for embroidering.

[0003] Common hat frame equipment consists of rotation mechanisms change into rotation of a rotation frame the directional movement X of the base frame attached near the cylinder bed of an embroidery sewing machine free [movement in the direction of Y], the rotation frame supported by the base frame free [rotation] with the direction of Y at the circumference of an parallel shaft, the hat frame with which it is equipped free [attachment and detachment on a rotation frame] and which can set a hat possible, and a cloth conveyance frame etc. (for example, refer to JP,8-232158,A A base frame is connected with a cloth conveyance frame through a connection mechanism, and the move drive of a base frame and the rotation frame is carried out in the direction of Y with a cloth conveyance frame.

[0004] In the aforementioned rotation mechanism, if it has the connecting plate of one pair of right and left fixed to a cloth conveyance frame possible [fixed release], the connection rod which connects both [these] connecting plates, and the wire by which it was twisted around the rotation frame and both ends were connected with the one aforementioned pair of connecting plates, respectively and the move drive of one pair of connecting plates is carried out in the direction of X with a cloth conveyance frame, the rotation frame and hat frame with which the wire was twisted will rotate. The wire twisted around the rotation frame is prolonged from the upper-limit section of a rotation frame to each connecting plate, and the edge of a wire is being fixed to the undersurface section of a connecting plate on the screw etc.

[0005] By the way, when equipping multi-head type embroidery sewing equipment with two or more hat frame equipments, since the distance between heads of multi-head type embroidery sewing equipment (distance between cylinder beds) is set as predetermined distance (for example, about 600mm), one pair of connecting plates of each hat frame equipment are fixed to a cloth conveyance frame so that it may not interfere with the connecting plate of **** hat frame equipment. Although the move drive of the cloth conveyance frame is carried out in the direction of X and a rotation frame rotates through a rotation mechanism in the state where of the upper-limit section of a rotation frame is located among the both ends of the wire fixed to one pair of connecting plates in each hat frame

equipment, the size of the embroidery field which can carry out embroidery sewing to a hat is decided by the moving range to the direction of X of the maximum rotation angle of a rotation frame, i.e., a cloth conveyance frame.

[0006]

[Problem(s) to be Solved by the Invention] Although the interval of one pair of connecting plates of each hat frame equipment is restricted when equipping multi-head type embroidery sewing equipment with two or more hat frame equipments When connecting with the section the edge of the wire prolonged from the upper-limit section of a rotation frame in the middle of the upper surface section of a connecting plate When connecting the edge of a wire with the section in the middle of the inferior-surface-of-tongue section of a connecting plate, a wire is not prolonged to the rotation frame of a connecting plate, and the edge of an opposite side in the inferior-surface-of-tongue side of a connecting plate, but the maximum rotation angle of a rotation frame becomes small.

[0007] That is, as shown in drawing 9, a cloth conveyance frame is moved to a left or the method of the right, and it is the rotation frame 101. It is one connecting plate 102 to the upper-limit section. When carrying out the maximum approach, Rotation frame 101 The upper-limit section to connecting plate 102 For the distance to an edge, in order that only A (A is about 3-5cm) may remain, only distance A minutes are the rotation frame 101. On the other hand, the maximum rotation angle to ** becomes small, and only the part by which the width of face of the maximum embroidery pattern which can be embroidered is equivalent to 2A becomes small. The purpose of this invention is offering the embroidery frame equipment which can enlarge the maximum rotation angle of a rotation frame.

[0008]

[Means for Solving the Problem] The base frame with which the hat frame equipment of a claim 1 is attached near the cylinder bed of embroidery sewing equipment free [movement in the length direction of a cylinder bed], The rotation frame with which it is supported by the base frame free [rotation] and it is equipped with a hat frame removable, In hat frame equipment equipped with the connection member which has one pair of wire connection sections which are fixed to a cloth conveyance frame removable and connect a part for the both ends of a wire with the wire twisted around the rotation frame, respectively to both ends The wire prolonged from the rotation frame side is ****(ed) to a rotation frame and the outside edge of an opposite side along with each wire connection section bottom.

[0009] If the move drive of one pair of wire connection sections is carried out in the direction of X with a cloth conveyance frame, the rotation frame around which the wire was twisted will rotate. A cloth conveyance frame can be moved to a left or the method of the right until the outside edge of one wire connection section is located near the upper-limit section of a rotation frame, since the wire prolonged from the rotation frame side is ****(ed) to the rotation frame and the outside edge of an opposite side along with each wire connection section bottom. So, the maximum rotation angle of a rotation frame becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large.

[0010] The wire by which the hat frame equipment of a claim 2 was ****(ed) to the outside edge of the aforementioned wire connection section in invention of a claim 1 is crooked to an upper surface side in the shape of U-turn at the outside edge, and is characterized by fixing the edge of the aforementioned wire to the wire fixed part by the side of the upper surface of the wire connection section. So, while the edge of a wire is simply and certainly fixable to the wire connection section, each wire can be certainly ****(ed) to an outside edge along with the wire connection section bottom. In addition, the same operation as a claim 1 is done so.

[0011] The hat frame equipment of a claim 3 is characterized by one wire fixed part of the one aforementioned pair of wire connection sections being constituted by the wire possible [grant of tension] in invention of a claim 2. By giving tension to a wire by one wire fixed part, a synchronous gap of the rotation of a rotation frame to X directional movement of a cloth conveyance frame can be prevented certainly. In addition, the same operation as a claim 3 is done so.

[0012]

[Embodiments of the Invention] Hereafter, the form of operation of this invention is explained based on

a drawing. This operation form is an example at the time of applying this invention to each of two or more hat frame equipments with which multi-head type embroidery sewing equipment is equipped removable and which carry out embroidery sewing of two or more hats at once. As shown in drawing 1 , multi-head type embroidery equipment SM has the sewing-machine support plate 2 of the shape of an abbreviation rectangle prolonged in the direction of X arranged in the rear side of the upper surface of the embroidery machine base frame 1 prolonged in the direction of X (longitudinal direction), and the embroidery machine base frame 1, and three multi-needle type embroidery sewing machines M1-M3 of the same structure are installed in the direction of X on the sewing-machine support plate 2.

[0013] In each of these embroidery sewing machines M1-M3, the needle-bar case 7 which supports 12 needle bars and 12 balances 9 possible [vertical movement] is supported by the front end section of the arm section 3 possible [movement in the direction of X]. The bed book soma 5 which the pedestal section 4 stands in a row in the arm section 3, and stands in a row in the soffit section of the pedestal section 4 on the other hand is fixed on the sewing-machine support plate 2, the cylinder bed 6 is ahead prolonged from the front end section of the bed book soma 5, and the **** capture machine etc. is formed in the point (front end section) of the cylinder bed 6.

[0014] A sewing needle 8 is attached in the soffit section of the needle bar of each needle-bar case 7, and the embroidery thread of 12 colors is supplied to 12 sewing needles 8 from 12 ***** 11 of ***** 10, respectively. If one of the needle bars is chosen by moving the needle-bar case 7 in the direction of X, and switching one desired sewing needle 8 to the sewing position which counters the pinholing 12 of the point of the cylinder bed 6 Only the balance 9 connected with the needle bar and it drives up and down, and an embroidery blind stitch is formed by the embroidery thread of the color chosen by collaboration with the sewing needle 8 of the needle bar, and a **** capture machine. The arm shaft horizontal which moves the aforementioned needle bar and a balance 9 up and down, and the lower shaft which rotates a **** capture machine are driven by the driving shaft 18 by which a rotation drive is carried out with V belt 17 connected with the sewing-machine motor.

[0015] The table 13 for work which can go up to the same height as the upper surface of the cylinder bed 6 is arranged in the anterior of the sewing-machine support plate 2. One pair of auxiliary tables 14 and 15 are formed in the right-and-left both sides of the table 13 for work. Installation support of the drive frame parts 16a and 16b for both ends of the long cloth conveyance frame 16 is carried out in the direction of X at the auxiliary tables 14 and 15. The move drive of the right-hand side drive frame part 16a is carried out in the direction of X by the direction drive of X (illustration abbreviation), and the move drive of left-hand side drive frame part 16b and the right-hand side drive frame part 16a is carried out in the direction of Y by the direction drive (illustration abbreviation) of Y.

[0016] The hat frame equipment 20 attached in each embroidery sewing machines M1-M3 is explained. As shown in drawing 2 - drawing 6 , hat frame equipment 20 In the cloth conveyance frame 16 bottom . The rotation frame 40 and the rotation frame 40 which are supported free [rotation] with the direction of Y by the rotation regulation mechanism 24 and the base frame 30 which regulate rotation of the base frame 30 attached in the guidance shaft 21 and the guidance shaft 21 which are prolonged in the direction of Y free [movement in the direction of Y], and the base frame 30 at the circumference of an parallel shaft It consists of hat frame 90 grades with which the rotation mechanism 50 to rotate, the connection mechanism 80 which connects the base frame 30 with the cloth conveyance frame 16 in operation, and the rotation frame 40 are equipped free [attachment and detachment].

[0017] The level wearing hole 22 of the direction sense of Y formed in the bed book soma 5 by the side of the end face of the cylinder bed 6 is equipped with the aforementioned guidance shaft 21 freer [attachment and detachment] than the front, and it is fixed to the bed book soma 5 possible [fixed release] by the fastener 23. one pair of rollers which the pivotable support cylinder part 31 attached outside free [sliding of the guidance shaft 21] by the lower part of the base frame 30 and three arms 30a, 30a, and 30b which make front view Y type on the base frame 30 are formed, and support the rotation frame 40 free [rotation] from the inside and an outside at one pair of upper upper-limit sections of each of arm 30a -- members 32 and 33 are formed however, an outside roller -- a member 33 -- an eccentric mechanism -- minding -- an inside roller -- centering control is possible to radial to a member

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[0018] the key which will be prolonged in the direction of Y in the undersurface of the cylinder bed 6 if the rotation regulation mechanism 24 is explained -- a member 25 is fixed -- having -- the base frame 30 -- a key -- the quirk which engages with a member 25 free, and regulates rotation of the base frame 30 -- a member 26 is fixed, and a base frame 30 is regulated so that it may not rotate to the circumference of a shaft parallel to the direction of Y, and it is freely movable only in

[0019] The rotation frame 40 is explained. the rotation frame 40 -- a cross section -- the hat frame supporter 42 of a cross-section semicircle arc prolonged in predetermined length prepares in the front from the circular annular section 41 and the Johan section of the annular section 41 -- having -- the periphery section of the annular section 41 -- a roller -- the roller slot 43 which a member 33 fits in and rolls, and the wire guide rail 44 which draws the wire 51 of the rotation mechanism 50 are formed The bottom of the center of the annular section 41 engages with the guide section 34 of the soffit of bottom arm 30b of the base frame 30 free [sliding], and is shown, and by the spring member, four engagement rollers 45 which engage with the engagement hole of the hat frame 90 with which the hat frame supporter 42 is equipped in the shape of outside attachment, and hold the hat frame 90 free on the rotation frame 40 carry out elastic energization, and are formed in the periphery section of the annular section 41.

[0020] Next, the rotation mechanism 50 is explained. The rotation mechanism 50 is a mechanism in which X directional movement of the cloth conveyance frame 16 is changed into rotation of the rotation frame 40. The wire 51 twisted around the rotation frame 40, and the holddown member 52 long and slender in the direction of X fixed to the cloth conveyance frame 16 possible [fixed release], The movable member 55 long and slender in the direction of X which has the wire connection sections 65 and 70 which relative displacement to the direction of X is possible, and connect a part for the both ends of the aforementioned wire 51 to the base frame 30, respectively to both ends, It consists of connection mechanism 75 grades for adjustment which connect the movable member 55 possible [adjustment of the direction position of X] to a holddown member 52. In addition, a holddown member 52 and the movable member 55 are equivalent to a connection member.

[0021] One pair of connection holes 53 are formed in each of the direction both ends of X of a holddown member 52, it is in the state where the undersurface of a holddown member 52 was made to contact direction frame part of X 16c, the screw member with a knob (illustration abbreviation) made to insert in one pair of connection holes 53 is screwed on direction frame part of X 16c, and a holddown member 52 is concluded by direction frame part of X 16c. The movable member 55 is formed in the anterior of the horizontal plate section 56 which contacts a holddown member 52, and the horizontal plate section 56 in one, and has the engagement section 57 with which the upper-limit flecion 36 of the connecting plate 35 fixed to the base frame 30 engages.

[0022] The horizontal plate section 56 has the length of the direction of X shorter than a holddown member 52, and has contacted in addition to the both-ends part in which the aforementioned connection hole 53 of a holddown member 52 was formed. The engagement section 57 has the perpendicular section 58 prolonged upwards from the front end section of the horizontal plate section 56, the top horizontal level 59 prolonged from the upper limit of the perpendicular section 58 to the front, the perpendicular section 60 prolonged from the front end of the top horizontal level 59 to a lower part, and the bottom horizontal level 61 prolonged from the soffit of the perpendicular section 60 to back.

[0023] The bottom horizontal level 61 is shorter than the top horizontal level 59, the connecting plate 35 prolonged upwards from the base frame 30 between the back end section of the bottom horizontal level 61, a holddown member 52, and the front end section of the perpendicular section 58 is inserted, and the flecion 36 crooked from the upper limit of a connecting plate 35 to the front is engaging with the engagement section 57. So, even if it demounts hat frame equipment 20 from multi-head type embroidery sewing equipment SM, a holddown member 52, the movable member 55, and a wire 51 are held to the base frame 30 at a predetermined connection relation.

[0024] The wire connection section 65 on the left-hand side of the movable member 55 has the piece 68 of connection connected with the upper surface section of the level connecting plate 66 which fixes on

the undersurface of the movable member 55 and projects to the front, and a connecting plate 66 possible [movement in the direction of X]. The wire 51 prolonged from the rotation frame 40 to left-hand side is ****(ed) to the left-hand side outside edge 67 along with the connecting-plate 66 bottom, it is crooked to an upper surface side in the shape of U-turn at the outside edge 67, and the edge of a wire 51 is being fixed to fixed part 68c of the upper surface of the piece 68 of connection.

[0025] On the other hand, the wire 51 which the right-hand side wire connection section 70 has the level connecting plate 71 which fixes on the undersurface of the movable member 55 and projects to the front, and is prolonged from the rotation frame 40 to right-hand side is ****(ed) to the right-hand side outside edge 72 along with the connecting-plate 71 bottom, it is crooked to an upper surface side in the shape of U-turn at the outside edge 72, and the edge of a wire 51 is being fixed to fixed part 71a of the upper surface of a connecting plate 71.

[0026] In the wire connection section 65 of the aforementioned left-hand side, the right end portions of the connecting plate 66 projected from the movable member 55 to the anterior and the piece 68 of connection are formed in the flections 66a and 68a crooked upwards. the screw supported by flection 66a -- a member 69 is screwed in flection 68a -- making -- a screw -- tension can be given to a wire 51 if the piece 68 of connection is moved to right-hand side to a connecting plate 66 by rotation of a member 69

[0027] the aforementioned connection mechanism 75 for adjustment is screwed on a holddown member 52 in the state where it inserted in in the direction of X formed in the movable member 55 at one pair of long long holes 77, and each long hole 77 -- having -- the screw with a knob which can conclude the movable member 55 to a holddown member 52 -- it has a member 76 a screw with a knob -- major-diameter shank 76b is formed in the knob 76a bottom of a member 76, and screw section 76c is formed in the major-diameter shank 76b bottom

[0028] a screw -- screw section 76c of a member 76 is made to insert in a long hole 77, and a part for the point is screwed on the holddown member 52 If knob 76a is turned and major-diameter shank 76b is dropped, the movable member 55 will be pinched on the upper surface of a holddown member 52, and the undersurface of major-diameter shank 76b, and the movable member 55 will be concluded to a holddown member 52. If knob 76a is turned and major-diameter shank 76b is raised, conclusion of the movable member 55 to a holddown member 52 is canceled, and the movable member 55 will be in the state which can be displaced relatively in the direction of X to a holddown member 52.

[0029] By the way, long hole 55a long in the direction of X is formed in the direction center section of X of the movable member 55, and datum-line 55b is attached to a part for the long hole 55a order both ends of the upper surface of the movable member 55. Moreover, datum-line 36a is attached also to the upper surface of the flection 36 of a connecting plate 35, and the position where these datum lines 55b and 36b are located in a line on a straight line is set as the expected home position of the rotation frame 40. in this state, it is shown in drawing 4 -- as -- a screw -- screw section 76c of a member 76 is located in the direction center section of X of the long hole 77, and the movable member 55 is connected in the state where it can be displaced relatively to right-and-left both directions to a holddown member 52

[0030] And if the rotation frame 40 is clockwise rotated from the state of drawing 4 after the connection mechanism 75 for adjustment cancels conclusion of the movable member 55 to a holddown member 52 for example, the movable member 55 will move to right-hand side to a holddown member. Thus, moving the movable member 55 which has the wire connection sections 65 and 70 to a holddown member 40 (base frame) in the direction of X, the rotation frame 40 can be rotated and the home position of the rotation frame 40 can be adjusted. In addition, you may rotate the rotation frame 40 by moving the movable member 55 to a holddown member.

[0031] if the connection mechanism 80 is explained briefly -- connection -- a member 81 -- a collar -- the with shaft 82 supports -- having -- the collar -- the upper-limit section of a control lever 83 is supported pivotably possible [rotation] on the with shaft 82 -- having -- a control lever 83 -- operating it -- a collar, if the with shaft 82 is switched to a fixed position the clamp mechanism besides illustration -- a collar -- the with shaft 82 -- a lower part -- moving -- a collar -- flange 82a of the upper-limit section of the with shaft 82 -- connection -- a member 81 -- Y-axis delivery -- it is fixed to a member 28 That is,

the base frame 30 is connected with the cloth conveyance frame 16 through the connection mechanism 80, and a move drive is carried out in the direction of Y with the cloth conveyance frame 16.

[0032] Explanation of the hat frame 90 constitutes the hat frame 90 from presser-foot frame part material 92 fixed to the hat frame main part 91 and this hat frame main part 91 of the letter of a curve with which the rotation frame 40 is equipped free [attachment and detachment] free [attachment and detachment] from an outside on both sides of a hat 100, and a configuration attachment component 93. Beforehand, although the hat frame 90 is equipped with a hat 100 at an external preparation station, where fixed support of the hat frame main part 91 is carried out in that case at a hat frame set frame (illustration abbreviation), the hat frame main part 91 is put and equipped with a hat 100 from the front, where the ***** is developed outside.

[0033] Although press down from the outside of a hat 100, set the frame part material 92, and the connecting fitting 94 of right and left of the presser-foot frame part material 92 is made to engage with the engagement hook 95 which corresponds, respectively and being connected, it is held at the state where the cloth of the transverse-plane section of a hat 100 and a lateral portion on either side stretched by the configuration attachment component 93, at this time. And the rotation frame 40 of hat frame equipment 20 is equipped with the hat frame 90 equipped with the hat 100 after that.

[0034] After equipping the rotation frame 40 with the hat frame 90 which set the hat 100, Since the movable member 55 is connected possible [adjustment of the direction position of X] to the holddown member 52 by the connection mechanism 75 for adjustment when the center of a hat 100 has shifted from the center of the hat frame 90, Moving the movable member 55 which has the wire connection sections 65 and 70 to a holddown member 52 in the direction of X, the rotation frame 40 is rotated and a home position is adjusted.

[0035] So, when equipping multi-head type embroidery sewing equipment SM with two or more hat frame equipments 20 and performing embroidery sewing simultaneously on two or more hats, it sets to each of two or more hat frame equipments 20. Since the home position of the rotation frame 40 to the base frame 30 can be independently adjusted, without moving the cloth conveyance frame 16 even if the center of a hat 100 has shifted from the center of the hat frame 90, it becomes possible to raise embroidery position precision about two or more hats of all.

[0036] One pair of long holes 77 long in the direction of X formed in the movable member 55 in the connection mechanism 75 for adjustment, it screws on a holddown member 52 in the state where it inserted in each long hole 77 -- having -- the screw with a knob which can conclude the movable member 55 to a holddown member 52, since it has a member 76 a screw with a knob -- it becomes possible to cancel simply the conclusion to the holddown member 52 of the movable member 55, to be able to adjust the direction position of X for the movable member 55 easily to a holddown member 52, and to conclude the movable member 55 simply [a holddown member 52] and certainly by the member 76

[0037] The cloth conveyance frame 16 can be moved to the method of the right until the outside edge 67 of the connecting plate 66 of the wire connection section 65 is located near the upper-limit section of the rotation frame 40, for example as shown in drawing 8 , since the wire 51 prolonged from the upper-limit section of the rotation frame 40 was ****(ed) to a rotation frame and the outside edges 67 and 72 of an opposite side along with each wire connection sections 65 and 70 bottom. Moreover, the cloth conveyance frame 16 can be moved to a left until the outside edge 72 of the connecting plate 71 of the wire connection section 70 is located near the upper-limit section of the rotation frame 40. So, the maximum rotation angle of the rotation frame 40 becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large.

[0038] The wire 51 ****(ed) to the outside edges 67 and 72 of the wire connection sections 65 and 70 Since you made it crooked to an upper surface side in the shape of U-turn at the outside edges 67 and 72 and the both ends of a wire 51 were fixed to the upper surface section of the piece 68 of connection of the wire connection section 65, and the wire connection section 70 upper-surface section A wire 51 can be certainly ****(ed) to the outside edges 67 and 72 along with the wire connection sections 65 and 70 bottom. And since the wire fixed part 65 was constituted possible [grant of tension] on the wire 51, a

synchronous gap of the rotation of the rotation frame 40 to X directional movement of the cloth conveyance frame 16 can be prevented certainly.

[0039] In addition, this invention is not limited to the aforementioned operation form, but various change can be added to the aforementioned operation form in the range which does not deviate from the technical thought of this invention at existing technology and this existing contractor based on technology obvious.

[0040]

[Effect of the Invention] A cloth conveyance frame can be moved to a left or the method of the right until the outside edge of one wire connection section is located near the upper-limit section of a rotation frame, since the wire prolonged from the rotation frame side was *****(ed) to the rotation frame and the outside edge of an opposite side along with each wire connection section bottom according to the hat frame equipment of a claim 1. So, the maximum rotation angle of a rotation frame becomes large, and the width of face of the maximum embroidery pattern which can be embroidered also becomes large. So, it also becomes possible to secure the embroidery field to the conventional hat, to be short in the distance between cylinder beds in multi-head type embroidery sewing equipment, and to attain a miniaturization.

[0041] Although the same effect as a claim 1 is done so according to the hat frame equipment of a claim 2 Since the wire *****(ed) to the outside edge of the aforementioned wire connection section was made crooked to an upper surface side in the shape of U-turn at the outside edge and the edge of the aforementioned wire was fixed to the wire fixed part by the side of the upper surface of the wire connection section The edge of a wire can simply and certainly be fixed to the wire connection section, and, moreover, each wire can be certainly *****(ed) to an outside edge along with the wire connection section bottom.

[0042] according to the hat frame equipment of a claim 3, although the effect of a claim 2 and this appearance is done so, since one wire fixed part of the one aforementioned pair of wire connection sections was constituted possible [grant of tension] on the wire, a synchronous gap of the rotation of a rotation frame to X directional movement of a cloth conveyance frame can be certainly prevented by giving tension to a wire

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the whole multi-head type embroidery equipment perspective diagram concerning the operation gestalt of this invention.

[Drawing 2] It is the perspective diagram of the hat frame equipment (hat **** wearing state) with which multi-head type embroidery equipment is equipped.

[Drawing 3] It is the plan of hat frame equipment.

[Drawing 4] It is the front view of hat frame equipment.

[Drawing 5] It is the side elevation of hat frame equipment.

[Drawing 6] It is the important section expansion perspective diagram of hat frame equipment.

[Drawing 7] It is the front view of hat frame equipment.

[Drawing 8] It is the front view of hat frame equipment.

[Drawing 9] It is the front view of conventional hat frame equipment.

[Description of Notations]

SM Multi-head type embroidery sewing equipment

6 Cylinder Bed

16 Cloth Conveyance Frame

20 Hat Frame Equipment

30 Base Frame

40 Rotation Frame

51 Wire

52 Holddown Member

55 Rotation -- Member

65 70 Wire connection section

67 72 Outside edge

90 Hat Frame

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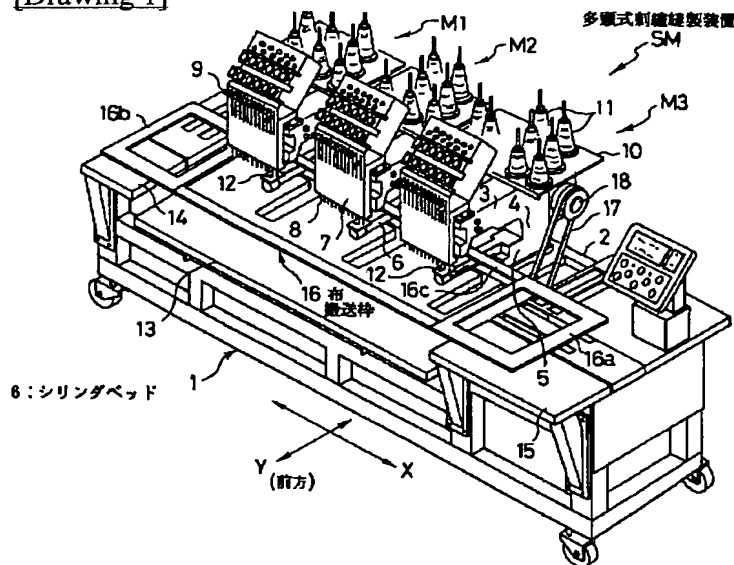
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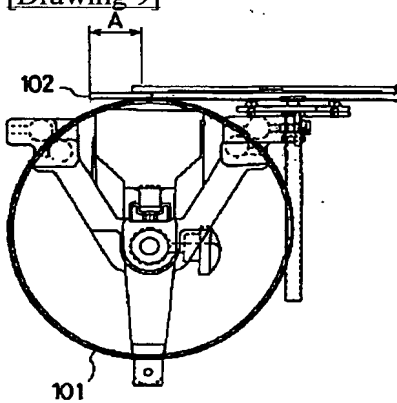
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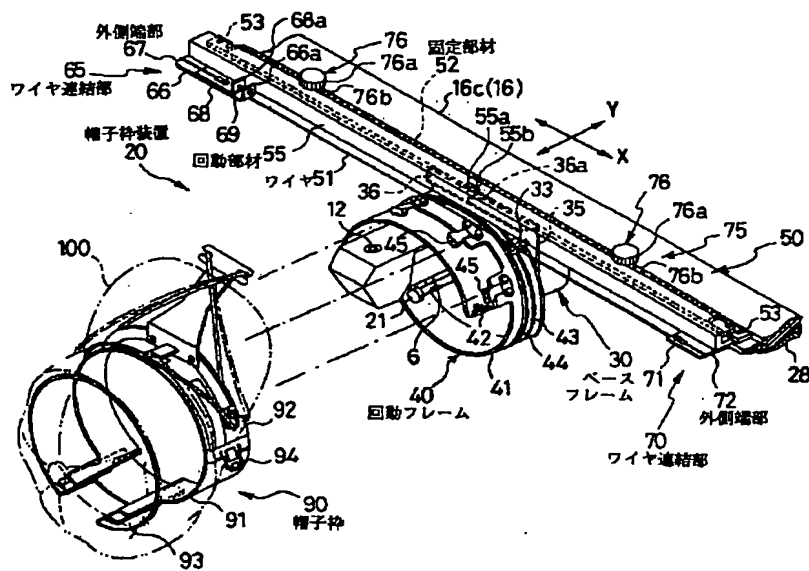
[Drawing 1]



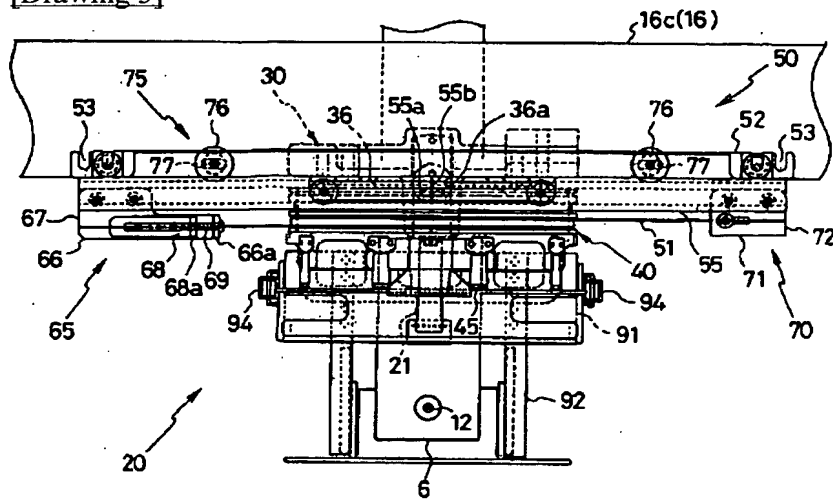
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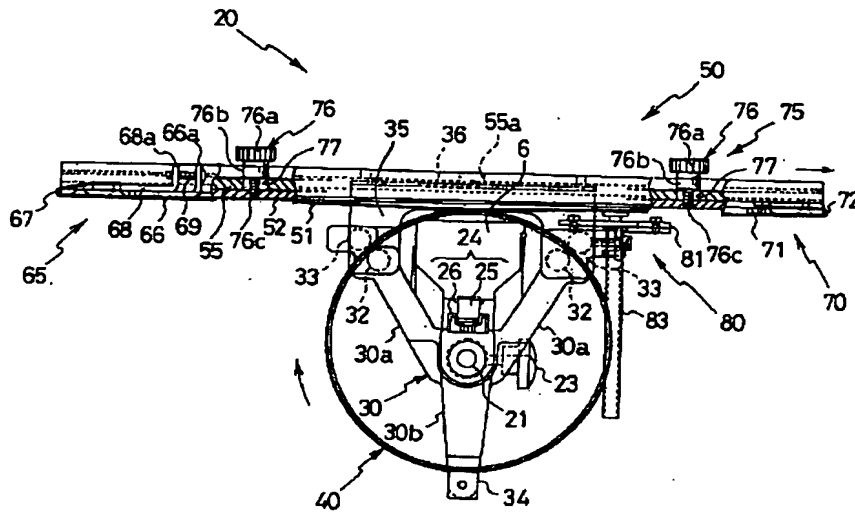
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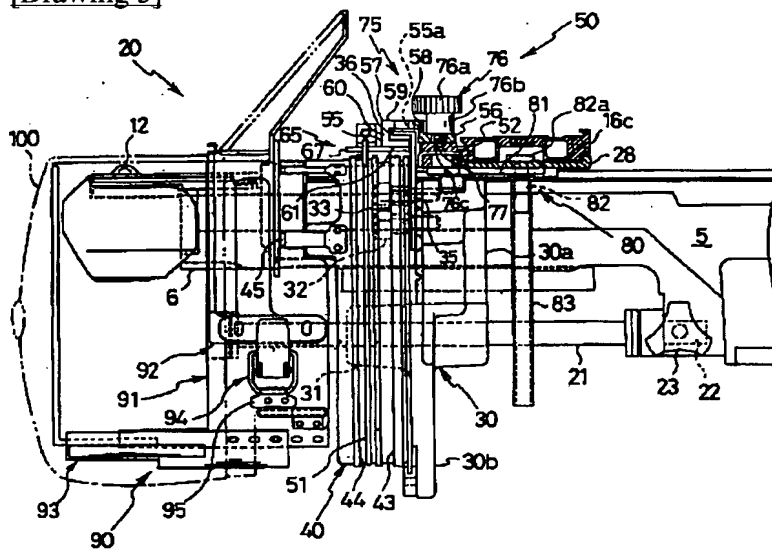
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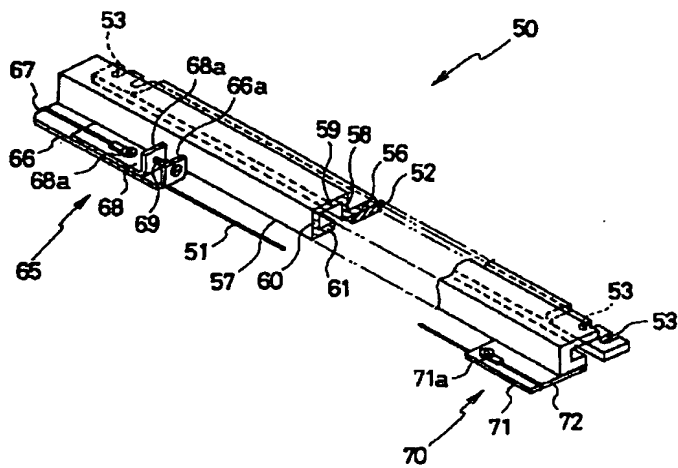
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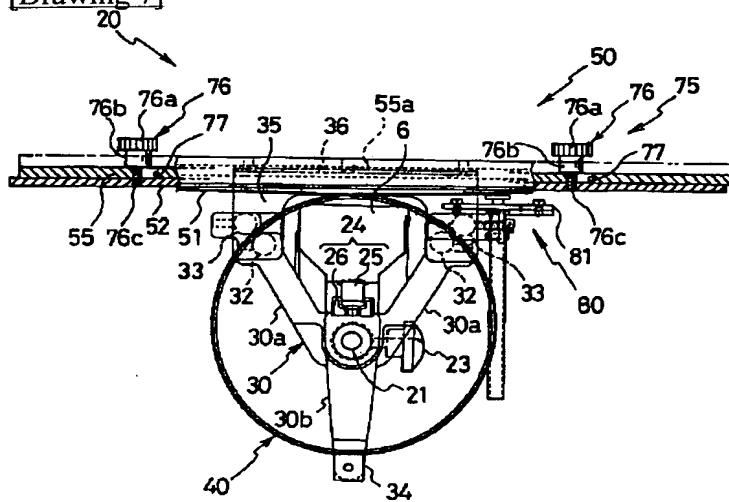
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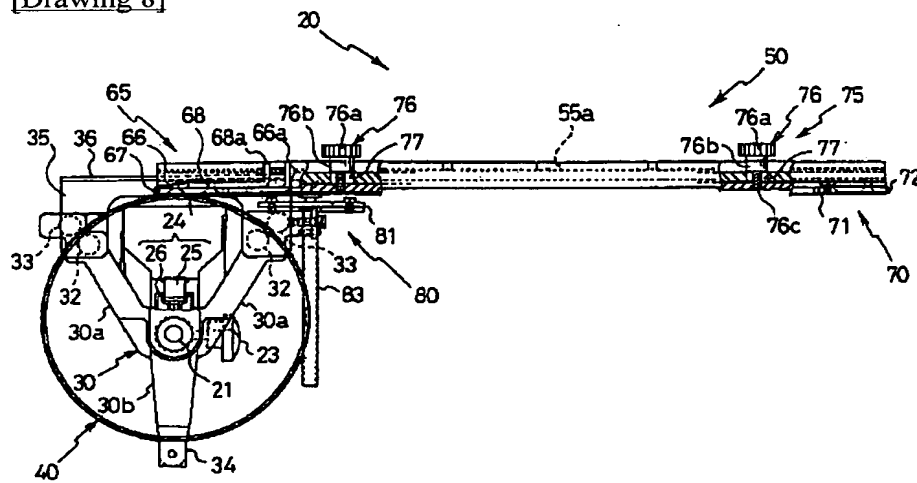
[Drawing 6]



[Drawing 7]



[Drawing 8]



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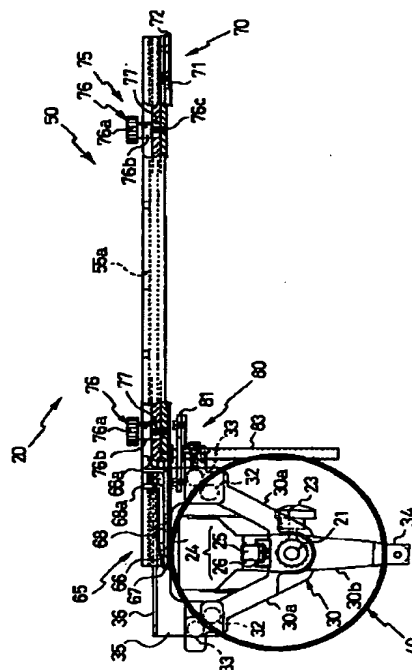
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(54) 【発明の名称】 帽子枠装置

(57) 【要約】

【課題】 回動フレームの最大回動角を大きくすることのできる帽子枠装置を提供する。

【解決手段】 回動フレーム40側から延びるワイヤ51は、連結板66、701下側に沿って左側の外側端部67、72まで夫々導設され、その外側端部67、72でUターン状に上面側へ夫々屈曲されて、ワイヤ51の両端部が連結片68の上面の固定部68cと連結板70の上面の連結部70aに夫々固定されている。一方の連結板66、71の外側端部67、72が回動フレーム67の上端部付近に位置するまで、布搬送枠16を左方または右方へ移動させることができるため、回動フレーム40の最大回動角が大きくなる。



【特許請求の範囲】

【請求項1】 刺繍縫製装置のシリンダベッド付近にシリンダベッドの長さ方向へ移動自在に取付けられるベースフレームと、ベースフレームに回動自在に支持され帽子枠が着脱可能に装着される回動フレームと、回動フレームに巻き付けられたワイヤと、布搬送枠に着脱可能に固定されワイヤの両端部分を夫々連結する1対のワイヤ連結部を両端部に有する連結部材を備えた帽子枠装置において、

前記回動フレーム側から延びたワイヤが、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設されたことを特徴とする帽子枠装置。

【請求項2】 前記ワイヤ連結部の外側端部まで導設されたワイヤは、その外側端部でUターン状に上面側へ屈曲され、前記ワイヤの端部がワイヤ連結部の上面側のワイヤ固定部に固定されたことを特徴とする請求項1に記載の帽子枠装置。

【請求項3】 前記1対のワイヤ連結部の一方のワイヤ固定部は、ワイヤに張力を付与可能に構成されたことを特徴とする請求項2に記載の帽子枠装置。

【発明の詳細な説明】**【0001】**

【発明の属する技術分野】 本発明は、刺繍縫製装置に装着して帽子に刺繍を施せる帽子枠装置に関し、特に、帽子へ刺繍縫製できる刺繍領域を拡大できるように構成したものに関する。

【0002】

【従来の技術】 多頭式刺繍縫製装置は、複数の刺繍マシンと、これら刺繍マシンのシリンダベッドと直交するX方向（左右方向）とY方向（前後方向）とに独立に移動駆動される布搬送枠と、この布搬送枠に着脱自在に取付けられ被刺繍布を刺繍縫製可能にセットできる刺繍枠を有する一方、多頭式刺繍縫製装置の複数の刺繍マシンの各々に着脱可能に装着して、帽子に刺繍を施す為の帽子枠装置が種々実用に供されている。

【0003】 一般的な帽子枠装置は、刺繍マシンのシリンダベッド付近にY方向へ移動自在に取付けられるベースフレームと、ベースフレームにY方向と平行な軸回りに回動自在に支持される回動フレームと、回動フレームに着脱自在に装着され帽子を刺繍縫製可能にセットできる帽子枠と、布搬送枠のX方向移動を回動フレームの回動に変換する回動機構等で構成されている（例えば、特開平8-232158号公報参照）。ベースフレームは連結機構を介して布搬送枠に連結され、ベースフレームと回動フレームは布搬送枠とともにY方向へ移動駆動される。

【0004】 前記回動機構は、布搬送枠に固定解除可能に固定される左右1対の連結板と、これら両連結板を連結する連結ロッドと、回動フレームに巻き付けられ両端部が前記1対の連結板に夫々連結されたワイヤを有し、

布搬送枠とともに1対の連結板がX方向へ移動駆動されると、ワイヤが巻き付けられた回動フレームと帽子枠が回動する。回動フレームに巻き付けられたワイヤは、回動フレームの上端部から各連結板へ延び、ワイヤの端部は連結板の下面部にビス等で固定されている。

【0005】 ところで、多頭式刺繍縫製装置に複数の帽子枠装置を装着する場合、多頭式刺繍縫製装置の頭部間距離（シリンダベッド間距離）は所定距離（例えば、約600mm）に設定されているため、各帽子枠装置の1対の連結板は、隣合う帽子枠装置の連結板と干渉しないように布搬送枠に固定される。各帽子枠装置において1対の連結板に固定されたワイヤの両端部の間に回動フレームの上端部が位置する状態で、布搬送枠がX方向へ移動駆動され、回動機構を介して回動フレームが回動するが、帽子に刺繍縫製できる刺繍領域の大きさは、回動フレームの最大回動角即ち布搬送枠のX方向への移動範囲によって決まる。

【0006】

【発明が解決しようとする課題】 多頭式刺繍縫製装置に複数の帽子枠装置を装着する場合、各帽子枠装置の1対の連結板の間隔は制限されるが、回動フレームの上端部から延びるワイヤの端部を連結板の上面部の途中部に連結する場合にも、ワイヤの端部を連結板の下面部の途中部に連結する場合にも、ワイヤが連結板の下面側を連結板の回動フレームと反対側の端部まで延びておらず、回動フレームの最大回動角が小さくなる。

【0007】 即ち、図9に示すように、布搬送枠を左方または右方へ移動させていって回動フレーム101の上端部に一方の連結板102を最大接近させたとき、回動フレーム101の上端部から連結板102の端部までの距離がA（Aは約3～5cm）だけ残るため、距離A分だけ回動フレーム101の一方方向への最大回動角が小さくなり、刺繍可能な最大刺繍模様幅が2Aに相当する分だけ小さくなる。本発明の目的は、回動フレームの最大回動角を大きくすることのできる刺繍枠装置を提供することである。

【0008】

【課題を解決するための手段】 請求項1の帽子枠装置は、刺繍縫製装置のシリンダベッド付近にシリンダベッドの長さ方向へ移動自在に取付けられるベースフレームと、ベースフレームに回動自在に支持され帽子枠が着脱可能に装着される回動フレームと、回動フレームに巻き付けられたワイヤと、布搬送枠に着脱可能に固定されワイヤの両端部分を夫々連結する1対のワイヤ連結部を両端部に有する連結部材を備えた帽子枠装置において、回動フレーム側から延びたワイヤが、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設されたものである。

【0009】 布搬送枠とともに1対のワイヤ連結部がX方向へ移動駆動されると、ワイヤが巻き付けられた回動

フレームが回転する。回転フレーム側から延びたワイヤは、各ワイヤ連結部の下側に沿って回転フレームと反対側の外側端部まで導設されているため、一方のワイヤ連結部の外側端部が回転フレームの上端部近傍に位置するまで、布搬送枠を左方または右方へ移動させることができる。それ故、回転フレームの最大回転角が大きくなり、刺繍可能な最大刺繍模様幅も大きくなる。

【0010】請求項2の帽子枠装置は、請求項1の発明において、前記ワイヤ連結部の外側端部まで導設されたワイヤは、その外側端部でUターン状に上面側へ屈曲され、前記ワイヤの端部がワイヤ連結部の上面側のワイヤ固定部に固定されたことを特徴とするものである。それ故、ワイヤ連結部にワイヤの端部を簡単・確実に固定できるとともに、各ワイヤをワイヤ連結部の下側に沿って外側端部まで確実に導設することができる。その他請求項1と同様の作用を奏する。

【0011】請求項3の帽子枠装置は、請求項2の発明において、前記1対のワイヤ連結部の一方のワイヤ固定部は、ワイヤに張力を付与可能に構成されたことを特徴とするものである。一方のワイヤ固定部によりワイヤに張力を付与することで、布搬送枠のX方向移動に対する回転フレームの回転の同期ずれを確実に防止することができる。その他請求項3と同様の作用を奏する。

【0012】

【発明の実施の形態】 以下、本発明の実施の形態について図面に基いて説明する。本実施形態は多頭式刺繍縫製装置に着脱可能に装着され複数の帽子を一度に刺繍縫製する複数の帽子枠装置の各々に本発明を適用した場合の例である。図1に示すように、多頭式刺繍装置SMは、X方向（左右方向）へ延びる刺繍機ベースフレーム1と、刺繍機ベースフレーム1の上面の後部側に配設されたX方向へ延びる略矩形形状のミシン支持板2を有し、ミシン支持板2上に3台の同一構造の多針式刺繍ミシンM1～M3がX方向に並設されている。

【0013】これら刺繍ミシンM1～M3の各々において、そのアーム部3の前端部には、12本の針棒と12個の天秤9とを上下動可能に支持する針棒ケース7が、X方向へ移動可能に支持されている。一方、アーム部3には脚柱部4が連なり、脚柱部4の下端部に連なるベッド本体部5は、ミシン支持板2上に固定され、ベッド本体部5の前端部からシリンダベッド6が前方に延び、シリンダベッド6の先端部（前端部）には糸輪捕捉器等が設けられている。

【0014】各針棒ケース7の針棒の下端部には縫針8が取付けられ、12本の縫針8には糸立台10の12個の糸立て11から12色の刺繍糸が夫々供給され、針棒ケース7をX方向に移動させて、所望の1つの縫針8をシリンダベッド6の先端部の針穴12に対向する縫製位置に切換えることで針棒の1つが選択されると、その針棒とそれに連結された天秤9のみが上下に駆動され、そ

の針棒の縫針8と糸輪捕捉器との協働により選択された色の刺繍糸で刺繍縫目が形成される。前記針棒や天秤9を上下動させる上軸と糸輪捕捉器を回転させる下軸は、ミシンモータに連結されたVベルト17により回転駆動される駆動軸18により駆動される。

【0015】ミシン支持板2の前側にはシリンダベッド6の上面と同一高さまで上昇可能な作業用テーブル13が配設され、作業用テーブル13の左右両側には1対の補助テーブル14、15が設けられ、補助テーブル14、15にX方向へ長い布搬送枠16の両端部分の駆動枠部16a、16bが載置支持され、右側の駆動枠部16aがX方向駆動機構（図示略）によりX方向へ移動駆動され、左側の駆動枠部16bと右側の駆動枠部16aとがY方向駆動機構（図示略）によりY方向へ移動駆動される。

【0016】各刺繍ミシンM1～M3に取付けられる帽子枠装置20について説明する。図2～図6に示すように、帽子枠装置20は、布搬送枠16の下側においてY方向へ延びる案内軸21、案内軸21にY方向へ移動自在に取付けられるベースフレーム30、ベースフレーム30の回転を規制する回転規制機構24、ベースフレーム30にY方向と平行な軸回りに回転自在に支持される回転フレーム40、回転フレーム40を回転させる回転機構50、ベースフレーム30を布搬送枠16に作動的に連結する連結機構80、回転フレーム40に着脱自在に装着される帽子枠90等で構成されている。

【0017】前記案内軸21は、シリンダベッド6の基端側のベット本体部5に形成されたY方向向きの水平な装着穴22に前方より着脱自在に装着され、固定具23で固定解除可能にベッド本体部5に固定される。ベースフレーム30の下部には、案内軸21に摺動自在に外嵌される枢支筒部31と、ベースフレーム30には、正面視Y形をなす3つの腕部30a、30a、30bが設けられ、上側の1対の腕部30aの各々の上端部には、回転フレーム40を内側と外側とから回転自在に支持する1対のローラ部材32、33が設けられている。但し、外側のローラ部材33は、偏心機構を介して、内側のローラ部材32に対して半径方向へ位置調節可能である。

【0018】回転規制機構24について説明すると、シリンダベッド6の下面には、Y方向に延びるキー部材25が固定され、ベースフレーム30には、キー部材25に前後方向に摺動自在に係合してベースフレーム30の回転を規制する溝形部材26が固定され、ベースフレーム30は、Y方向と平行な軸回りに回転しないように規制され、案内軸21に沿ってY方向にのみ移動自在である。

【0019】回転フレーム40について説明する。回転フレーム40には、断面円形の環状部41と、環状部41の上半部から前方へ所定長さ延びる断面半円弧状の帽子枠支持部42とが設けられ、環状部41の外周部に

は、ローラ部材33が嵌まって転動するローラ溝43と、回動機構50のワイヤ51を導くワイヤ案内溝44が形成されている。環状部41の中央の最下部は、ベースフレーム30の下側腕部30bの下端のガイド部34に摺動自在に係合して案内され、環状部41の外周部には、帽子枠支持部42に外嵌状に装着される帽子枠90の係合穴に係合して帽子枠90を回動フレーム40に着脱自在に保持する4つの係合ローラ45が、バネ部材で弾性付勢して設けられている。

【0020】次に、回動機構50について説明する。回動機構50は、布搬送枠16のX方向移動を回動フレーム40の回動に変換する機構で、回動フレーム40に巻き付けられたワイヤ51と、布搬送枠16に固定解除可能に固定されるX方向に細長い固定部材52と、ベースフレーム30に対してX方向へ相対移動可能であって前記ワイヤ51の両端部分を夫々連結するワイヤ連結部65、70を両端部に有するX方向に細長い可動部材55と、固定部材52に対して可動部材55をX方向位置を調整可能に連結する調整用連結機構75等で構成されている。尚、固定部材52と可動部材55が連結部材に相当する。

【0021】固定部材52のX方向両端部の各々には1対の連結穴53が形成され、固定部材52の下面をX方向枠部16cに当接させた状態で、1対の連結穴53に挿通させたツマミ付きのネジ部材(図示略)がX方向枠部16cに螺着され、固定部材52がX方向枠部16cに締結される。可動部材55は、固定部材52に当接する水平板部56と、水平板部56の前側に一体的に形成され、ベースフレーム30に固定された連結板35の上端屈曲部36が係合する係合部57を有する。

【0022】水平板部56は固定部材52よりX方向の長さが短く、固定部材52の前記連結穴53を形成した両端部分以外に当接している。係合部57は、水平板部56の前端部から上方へ延びる鉛直部58と、鉛直部58の上端から前方へ延びる上側水平部59と、上側水平部59の前端から下方へ延びる鉛直部60と、鉛直部60の下端から後方へ延びる下側水平部61を有する。

【0023】下側水平部61は上側水平部59より短く、下側水平部61の後端部と固定部材52及び鉛直部58の前端部との間に、ベースフレーム30から上方へ延びる連結板35が挿入され、連結板35の上端から前方へ屈曲した屈曲部36が係合部57に係合している。それ故、帽子枠装置20を多頭式刺繍縫製装置SMから取外しても、ベースフレーム30に対して固定部材52、可動部材55、ワイヤ51が所定の連結関係に保持される。

【0024】可動部材55の左側のワイヤ連結部65は、可動部材55の下面に固着されて前方へ突出する水平な連結板66と、連結板66の上面部にX方向へ移動可能に連結された連結片68を有する。回動フレーム4

0から左側へ延びるワイヤ51は、連結板66の下側に沿って左側の外側端部67まで導設され、その外側端部67でUターン状に上面側へ屈曲され、ワイヤ51の端部は連結片68の上面の固定部68cに固定されている。

【0025】一方、右側のワイヤ連結部70は、可動部材55の下面に固着されて前方へ突出する水平な連結板71を有し、回動フレーム40から右側へ延びるワイヤ51は、連結板71の下側に沿って右側の外側端部72まで導設され、その外側端部72でUターン状に上面側へ屈曲され、ワイヤ51の端部は連結板71の上面の固定部71aに固定されている。

【0026】前記左側のワイヤ連結部65において、可動部材55より前側へ突出した連結板66及び連結片68の右端部分は上方へ屈曲する屈曲部66a、68aに形成され、屈曲部66aに支持されたネジ部材69を屈曲部68aに螺合させ、ネジ部材69の回動により連結板66に対して連結片68を右側へ移動させると、ワイヤ51に張力を付与できるようになっている。

【0027】前記調整用連結機構75は、可動部材55に形成されたX方向に長い1対の長孔77と、各長孔77に挿通した状態で固定部材52に螺着され固定部材52に可動部材55を締結可能なツマミ付きのネジ部材76とを有する。ツマミ付きのネジ部材76のツマミ76aの下側には大径軸部76bが形成され、大径軸部76bの下側にネジ部76cが形成されている。

【0028】ネジ部材76のネジ部76cを長孔77に挿通させ、その先端部分が固定部材52に螺着されている。ツマミ76aを回し大径軸部76bを下降させると、固定部材52の上面と大径軸部76bの下面とで可動部材55が挟持され、固定部材52に対して可動部材55が締結される。ツマミ76aを回し大径軸部76bを上昇させると、固定部材52への可動部材55の締結が解除され、固定部材52に対して可動部材55がX方向へ相対移動可能な状態になる。

【0029】ところで、可動部材55のX方向中央部にはX方向に長い長孔55aが形成され、可動部材55の上面の長孔55aの前後両端部分には基準線55bがつけられている。また、連結板35の屈曲部36の上面にも基準線36aがつけられ、これら基準線55b、36bが一直線上に並ぶ位置が、回動フレーム40の所期の原点位置に設定されている。この状態では、図4に示すように、ネジ部材76のネジ部76cが長孔77のX方向中央部に位置しており、可動部材55は固定部材52に対して左右両方向へ相対移動し得る状態で連結されている。

【0030】そして、調整用連結機構75により固定部材52への可動部材55の締結を解除した後、例えば、図4の状態から回動フレーム40を時計回りに回動させると、固定部材に対して可動部材55が右側へ移動す

る。このように、固定部材40（ベースフレーム）に対してワイヤ連結部65、70を有する可動部材55をX方向へ移動させながら、回動フレーム40を回動させて回動フレーム40の原点位置を調整することができる。尚、固定部材に対して可動部材55を移動させることで、回動フレーム40を回動させてもよい。

【0031】連結機構80について簡単に説明すると、連結部材81に鉤付き軸82が支持され、その鉤付き軸82に操作レバー83の上端部が回動可能に枢支され、操作レバー83を操作して鉤付き軸82を固定位置に切換えると、図示外のクランプ機構により鉤付き軸82が下方に移動して、鉤付き軸82の上端部の鉤部82aにより連結部材81がY軸送り部材28に固定される。つまり、ベースフレーム30は連結機構80を介して布搬送枠16に連結され、布搬送枠16とともにY方向へ移動駆動される。

【0032】帽子枠90について説明すると、帽子枠90は、回動フレーム40に着脱自在に装着される湾曲状の帽子枠本体91と、この帽子枠本体91に帽子100を挟んで外側から着脱自在に固定される押え枠部材92と、形状保持部材93とで構成されている。予め外部の準備ステーションにおいて、帽子枠90に帽子100を装着するが、その場合帽子枠本体91を帽子枠セットフレーム（図示略）に固定支持した状態で、帽子枠本体91に帽子100をその汗取り部を外側へ展開した状態で前方より被せて装着する。

【0033】帽子100の外側から押え枠部材92をセットし、押え枠部材92の左右の連結金具94を、夫々対応する係合フック95に係合させて連結するが、このとき、形状保持部材93により、帽子100の正面部と左右の側面部の布地が張った状態に保持される。そして、その後、帽子100を装着した帽子枠90を帽子枠装置20の回動フレーム40に装着する。

【0034】帽子100をセットした帽子枠90を回動フレーム40に装着した後、帽子100の中心が帽子枠90の中心からずれている場合、調整用連結機構75により可動部材55は固定部材52に対してX方向位置を調整可能に連結されているため、固定部材52に対してワイヤ連結部65、70を有する可動部材55をX方向へ移動させながら、回動フレーム40を回動させて原点位置を調整する。

【0035】それ故、多頭式刺繍縫製装置SMに複数の帽子枠装置20を装着して、複数の帽子に同時に刺繍縫製を実行する場合、複数の帽子枠装置20の各々において、帽子100の中心が帽子枠90の中心からずれていても、布搬送枠16を移動させずに、ベースフレーム30に対する回動フレーム40の原点位置を独立に調整できるため、複数の帽子全てについて刺繍位置精度を高めることが可能になる。

【0036】調整用連結機構75においては、可動部材

55に形成されたX方向に長い1対の長孔77と、各長孔77に挿通した状態で固定部材52に螺着され固定部材52に可動部材55を締結可能なツマミ付きのネジ部材76とを有するので、ツマミ付きのネジ部材76により、可動部材55の固定部材52への締結を簡単に解除して、固定部材52に対して可動部材55をX方向位置を簡単に調整でき、可動部材55を固定部材52に簡単・確実に締結することが可能になる。

【0037】回動フレーム40の上端部から延びたワイヤ51を、各ワイヤ連結部65、70の下側に沿って回動フレームと反対側の外側端部67、72まで導設したので、例えば、図8に示すように、ワイヤ連結部65の連結板66の外側端部67が回動フレーム40の上端部近傍に位置するまで、布搬送枠16を右方へ移動させることができる。また、ワイヤ連結部70の連結板71の外側端部72が回動フレーム40の上端部近傍に位置するまで、布搬送枠16を左方へ移動させることができる。それ故、回動フレーム40の最大回動角が大きくなり、刺繍可能な最大刺繍模様幅の幅も大きくなる。

【0038】ワイヤ連結部65、70の外側端部67、72まで導設されたワイヤ51を、その外側端部67、72でUターン状に上面側へ屈曲させ、ワイヤ51の両端部をワイヤ連結部65の連結片68の上面部とワイヤ連結部70上面部に固定したので、ワイヤ51をワイヤ連結部65、70の下側に沿って外側端部67、72まで確実に導設することができる。そして、ワイヤ固定部65を、ワイヤ51に張力を付与可能に構成したので、布搬送枠16のX方向移動に対する回動フレーム40の回動の同期ずれを確実に防止することができる。

【0039】尚、本発明は前記実施形態に限定されず、本発明の技術的思想を逸脱しない範囲において、前記実施形態に既存の技術や当業者に自明の技術に基いて種々の変更を加えることもあり得る。

【0040】

【発明の効果】 請求項1の帽子枠装置によれば、回動フレーム側から延びたワイヤを、各ワイヤ連結部の下側に沿って回動フレームと反対側の外側端部まで導設したので、一方のワイヤ連結部の外側端部が回動フレームの上端部近傍に位置するまで、布搬送枠を左方または右方へ移動させることができる。それ故、回動フレームの最大回動角が大きくなり、刺繍可能な最大刺繍模様幅の幅も大きくなる。それ故、従来の帽子への刺繍領域を確保して、多頭式刺繍縫製装置においてはシリンダベッド間距離を短くて小型化を図ることも可能になる。

【0041】請求項2の帽子枠装置によれば、請求項1と同様の効果を奏するが、前記ワイヤ連結部の外側端部まで導設されたワイヤを、その外側端部でUターン状に上面側へ屈曲させ、前記ワイヤの端部をワイヤ連結部の上面側のワイヤ固定部に固定したので、ワイヤ連結部にワイヤの端部を簡単・確実に固定でき、しかも、各ワイ

ヤをワイヤ連結部の下側に沿って外側端部まで確実に導設することができる。

【0042】請求項3の帽子枠装置によれば、請求項2と同様の効果を奏するが、前記1対のワイヤ連結部の一方のワイヤ固定部を、ワイヤに張力を付与可能に構成したので、ワイヤに張力を付与することで、布搬送枠のX方向移動に対する回動フレームの回動の同期ずれを確実に防止することができる。

【図面の簡単な説明】

【図1】本発明の実施形態に係る多頭式刺繍装置の全体斜視図である。

【図2】多頭式刺繍装置に装着される帽子枠装置（帽子枠未装着状態）の斜視図である。

【図3】帽子枠装置の平面図である。

【図4】帽子枠装置の正面図である。

【図5】帽子枠装置の側面図である。

【図6】帽子枠装置の要部拡大斜視図である。

【図7】帽子枠装置の正面図である。

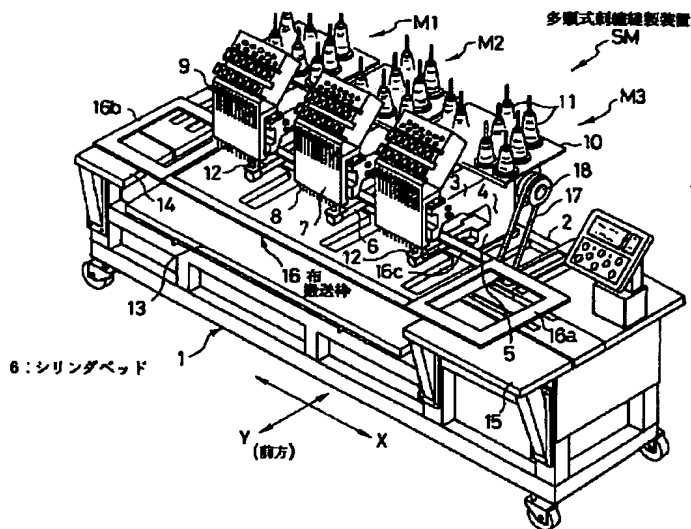
【図8】帽子枠装置の正面図である。

【図9】従来の帽子枠装置の正面図である。

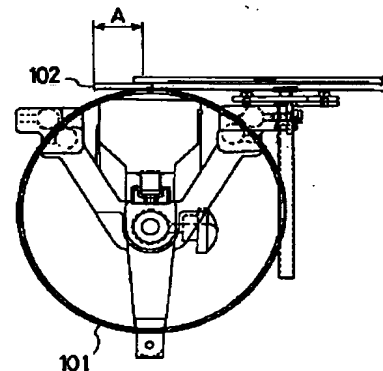
【符号の説明】

SM	多頭式刺繍縫製装置
6	シリンダベッド
16	布搬送枠
20	帽子枠装置
30	ベースフレーム
40	回動フレーム
51	ワイヤ
52	固定部材
55	回動部材
65, 70	ワイヤ連結部
67, 72	外側端部
90	帽子枠

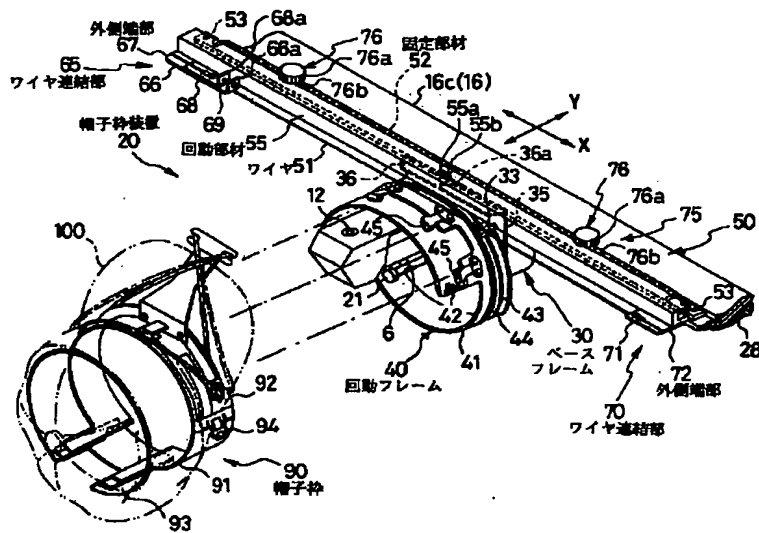
【図1】



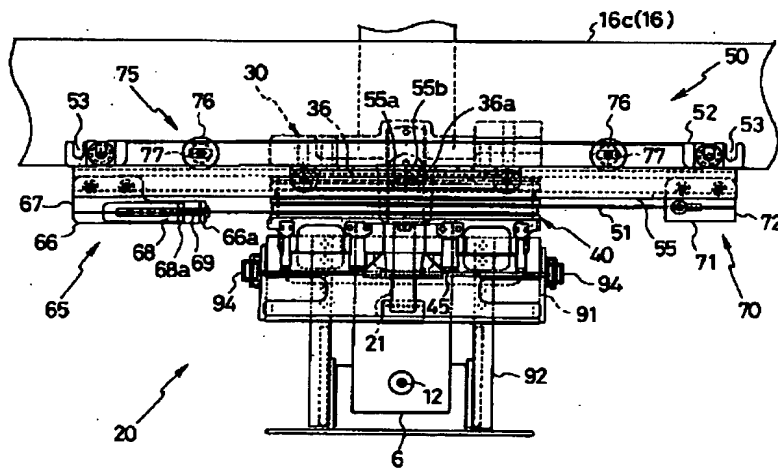
【図9】



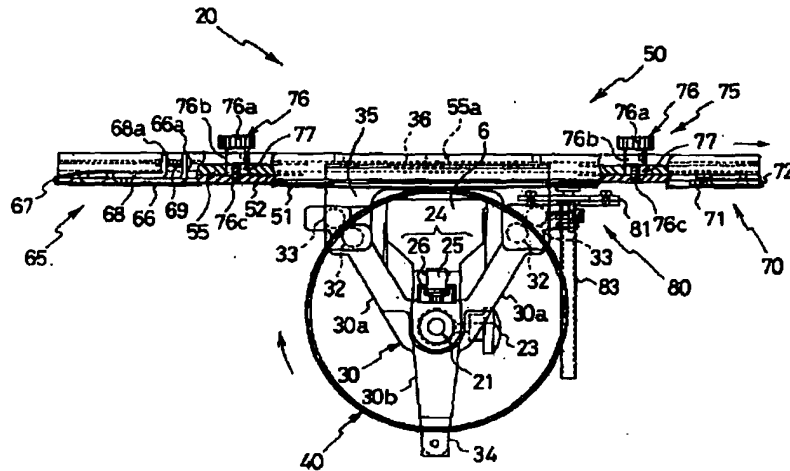
【図2】



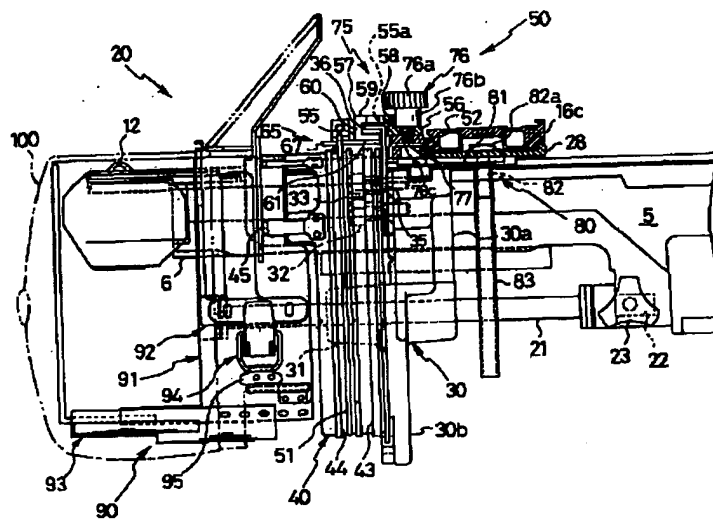
【図3】



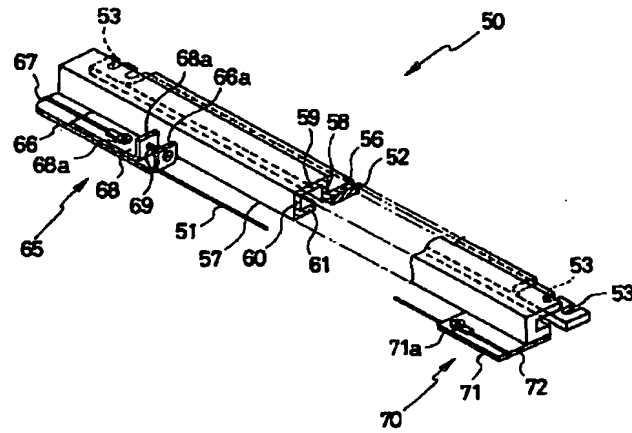
【図4】



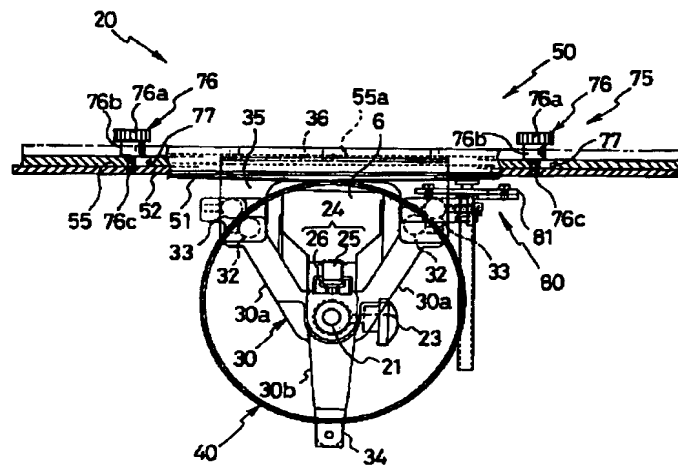
【図5】



【図6】



【図7】



【図8】

